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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BELLO, AGUSTIN

ART UNIT PAPER NUMBER

2633

DATE MAILED: 12/21/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/272,404

Applicant(s)

MIYATA ET AL.

Examiner

Agustin Bello

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 and 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7, 16, 17, 19, 28, 29, 33, 35, 37, are rejected under 35 U.S.C. 102(b) as being anticipated by Marcuse (U.S. Patent No. 5,608,561).

Regarding Claims 1 and 33, Marcuse teaches an apparatus comprising: an optical transmitter transmitting a signal light to a transmission path (Figure 1A), wherein the signal light has a corresponding rise time and fall time (inherent) and the transmitter adjusts at least one of the rise time and fall time (column 3 lines 18-36).

Regarding Claim 2, Marcuse teaches an apparatus as in claim 1, wherein the optical transmitter comprises: an adjusting circuit adjusting said at least one of the rise time and fall time (reference numeral 160 Figure 1B and Figure 2).

Regarding Claims 3, 16, 28, 35, and 37, Marcuse teaches an apparatus as in claim 1, wherein the optical transmitter comprises: a light source emitting a light (reference numeral 120 in Figure 1B); a modulation signal generator generating an electrical modulation signal a having a corresponding rise time and fall time (reference numeral 150 in Figure 1B); an adjusting circuit adjusting at least one of the rise time and fall time of the electrical modulation signal (reference numeral 160 in Figure 1B); and a modulator modulating the emitted light with the adjusted electrical modulation signal (reference numeral 130 in Figure 1B), to thereby produce said signal

light having at least one of the rise time and fall time of the signal light adjusted (column 3 lines 18-36).

Regarding Claim 4, 5, 7, 17, 19, and 29, Marcuse teaches an apparatus as in claim 1, wherein the transmitter adjusts both the rise time and the fall time (column 3 lines 34-36).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 and 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcuse in view of Yamashita (U.S. Patent No. 4,723,312) and Devenport (U.S. Patent No. 6,108,119).

Regarding Claims 6 and 18, Marcuse teaches an apparatus as in claims 1 and 16, but differs from the claimed invention in that Marcuse fails to specifically teach that the transmitter lengthens both the rise time and the fall time. However, one skilled in the art would clearly have recognized that one method of lengthening both the rise and fall time of the signal would have been to manipulate the values of the components that comprise the filter matching circuit used by Marcuse (reference numeral 160 in Figure 1B and Figure 2). Furthermore, both Yamashita and Devenport teach that manipulation of the components that comprise a filter, the function of which is to adjust both the rise time and the fall time of a signal, can result in an increase in the rise and fall times of an input signal (column 1 lines 45-54 and column 5 lines 60-67). One skilled in the art would have been motivated to increase the rise and fall time of a signal in order to avoid producing a significant overshoot or drop-off of the desired bias level of the laser.

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Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have manipulated the components that comprise a filter taught by Marcuse as taught by Devenport and Yamashita to achieve a lengthening of both the rise and fall time of the signal, thereby avoiding producing a significant overshoot or drop-off of the desired bias level of the laser.

5. Claims 8, 15, 20, 25, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcuse.

Regarding Claims 8 and 20, Marcuse teaches the limitations of claim 1 and 16 including adjusting both the rise time and the fall time of a signal. Marcuse fails to specifically teach making the adjustment in order to maintain amplitude deterioration and phase margin of the transmitted signal light within a specific range. However, making adjustments to the rise and fall time of the signal would have inherently resulted in changes to the amplitude deterioration and phase margin of the signal. Furthermore, one skilled in the art would clearly have recognized that as a result of the inherent effect on a signal observed by adjusting both the rise and fall time of a signal, maintaining the amplitude deterioration and phase margin of the signal within a specified range since could have been accomplished by trial and error in making the adjustment to the transition time is the signal.

Regarding Claim 15, Marcuse teaches the claimed invention except for having a plurality of said optical transmitters, each transmitting having a respective signal light having a different wavelength than the signal lights of the other optical transmitters; and an optical multiplexer multiplexing the signal lights together into a wavelength division multiplexed (WDM) signal which is transmitted through the transmission path. It would have been obvious to one of

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ordinary skill in the art to have replicated the device of Marcuse so that each of the plurality of lasers produced a distinct wavelength, then multiplexing those distinct wavelengths via a wavelength division multiplexer to produce a wavelength division multiplexed signal, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Furthermore, Official Notice is taken that multiplexing of a plurality of signals having distinct wavelengths is well known in the art and would have been an obvious improvement to the system of Marcuse for one skilled in the art, thereby allowing one skilled in the art to increase the amount of information transmitted.

Regarding Claims 25 and 32, Marcuse teaches a filter filtering the electrical modulation signal, but differs from the claimed invention in that Marcuse fails to specifically teach an electrical amplifier amplifying the electrical modulation signal prior to filtering. However, Official Notice is taken that is well known in the art to amplify a signal prior to filtering it. Furthermore, one skilled in the art would have recognized that by amplifying a signal prior to filtering it, the noise along with the signal would be amplified, thereby making it easier for a filter to filter out the noise and output the desired signal. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have amplified the modulation signal prior to filtering it via an amplifier in order to ease the process of filtering the signal.

6. Claims 9-12, 21, 22, 26, 27, 30, 31, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcuse in view of Yoneyama (U.S. Patent No. 5,801,860).

Regarding Claims 9, 10, 12, 21, 22, 26, 27, 30, 31, 34, and 36, Marcuse teaches an apparatus as in claim 1, comprising: transmitting a signal light through the transmission path,

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wherein the transmitter adjusts said at least one of the rise time and fall time. Marcuse differs from the claimed invention in that Marcuse fails to specifically teach that the changes are made in accordance with characteristics of the signal light received at a receiver. However, one skilled in the art would clearly have recognized that in order to maximize the benefit of the transmitter taught by Marcuse, it would have been beneficial to monitor the transmitted signal at a receiver, using a the information observed at the receiver to make adjustments at the transmitter, thereby allowing the transmitted signal to be optimized for the transmission path. Furthermore, Yoneyama teaches a monitoring and feedback system wherein the transmission of a signal is monitored at a receiver, wherein the information obtained is used to make adjustments to the transmitters in the system via a feedback signal to the transmitter (see Figure 5), thereby optimizing the system. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to monitor a signal transmitted to a receiver as taught by Yoneyama to maximize the benefit of the transmitter taught by Marcuse by using the information obtained at the receiver to make adjustments to the transmitter in the system via a feedback signal to the transmitter.

Regarding Claim 11, as discussed regarding claims 8 and 20, one skilled in the art would clearly have recognized that as a result of the inherent effect on a signal observed by adjusting both the rise and fall time of a signal, via the combination of Marcuse and Yoneyama, maintaining the amplitude deterioration and phase margin of the signal within a specified range since could have been accomplished by trial and error in making the adjustment to the transition time is the signal.

Claim Rejections - 35 USC § 103

7. Claims 13, 14, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcuse in view of Chraplyvy (U.S. Patent No. 5,420,868).

Regarding Claim 13 and 23, Marcuse teaches the limitation of claims 3 and 16, but differs from the claimed invention in that Marcuse fails to specifically teach that the modulator modulates the emitted light via one of the group consisting of optical phase modulation and optical frequency modulation. However, such modulation techniques are extremely well known in the art and would have been obvious to one skilled in the art, being that Marcuse teaches modulation of an optical signal. Furthermore, Chraplyvy teaches that it is well known in the art to use phase modulation in a system that modifies a modulation signal (see Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modulated the signal emitted by the device of Marcuse according the phase modulation techniques taught by Chraplyvy.

Regarding Claims 14 and 24, Chraplyvy also teaches a dispersion compensator compensating for wavelength dispersion characteristics of the transmission path (reference numeral 19 in Figure 2).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Both Takano and Hedberg teach control of rise and fall times.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB

December 12, 2001


JASON CHAN
SUPERVISORY PATENT EXAMINER
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